

Claims

1.

1 A tamper-indicating closure that includes:
2 a base wall having a cylindrical skirt for removably engaging a container finish,
3 a tamper band frangibly connected to said skirt, and
4 a plurality of wings extending inwardly from an inner surface of said tamper band for
5 engaging a container finish,
6 said wings being flexibly resiliently connected to said inner surface of said band along
7 lines that are disposed at a counterclockwise angle with respect to an axis of said skirt as viewed
8 from inside said skirt.

2.

1 The closure set forth in claim 1 wherein said tamper band includes a portion stepped
2 radially outwardly with respect to said skirt and being contiguously connected to said skirt by an
3 interconnecting wall portion, and wherein said wings are integrally connected to said interconnecting
4 wall portion whereby stiffness of said wings to flexure with respect to said band is greater adjacent
5 to said interconnecting wall portion than remote from said interconnecting wall portion.

3.

1 The closure set forth in claim 1 wherein said angle is in the range of greater than 0°
2 to 35°.

4.

1 The closure set forth in claim 1 wherein said wings have a flat edge facing said base
2 wall at an angle of 25° to 45° with respect to said base wall.

5.

1 The closure set forth in claim 4 wherein said angle is 35°.

6.

1 The closure set forth in claim 1 wherein each of said wings has a thickness in the
2 range of 0.024 to 0.03 inch.

7.

1 A tamper-indicating package that includes:
2 a container having a finish with at least one external thread segment and a plurality
3 of external ratchet teeth spaced from said thread segment, and
4 a tamper-indicating closure that includes:
5 a base wall having a skirt with at least one internal thread segment for engaging said
6 external thread segment on said finish,
7 a tamper band frangibly connected to said skirt, and
8 a plurality of wings extending inwardly from an inner surface of said tamper band for
9 engagement with said ratchet teeth on said finish,

10 said wings being resiliently flexibly connected to said inner surface of said band along
11 lines that are disposed at a counterclockwise angle with respect to an axis of said skirt as viewed
12 from inside said skirt.

8.

1 The package set forth in claim 7 wherein angular spacing between said wings is less
2 than angular spacing between said ratchet teeth.

9.

1 The closure set forth in claim 8 wherein said angular spacing between said wings is
2 one-half of said angular spacing between said ratchet teeth.

10.

1 The package set forth in claim 7 wherein said ratchet teeth are disposed in two
2 diametrically opposed groups.

11.

1 The package set forth in claim 10 wherein at least some of said ratchet teeth have an
2 abutment face at an acute angle to a diameter of said finish.

12.

1 The package set forth in claim 7 wherein said tamper band includes a portion stepped
2 radially outwardly with respect to said skirt and being contiguously connected to said skirt by an
3 interconnecting wall portion, and wherein said wings are integrally connected to said interconnecting
4 wall portion such that stiffness of said wings to flexure with respect to said band is greater adjacent
 to said interconnecting wall portion than remote from said interconnecting wall portion..

13.

1 A method of making a closure that includes the step of integrally molding a one-piece
2 closure shell that includes a base wall having a cylindrical skirt for removably engaging a container
3 finish, a tamper band frangibly connected to said skirt, and a plurality of wings integrally extending
4 inwardly from an inner surface of said tamper band for engagement with a container finish, said
5 wings being resiliently flexibly connected to said inner surface of said band along lines that are
6 disposed at a counterclockwise angle with respect to an axis of said skirt as viewed from inside said
7 skirt.

14.

1 The method set forth in claim 13 wherein said tamper band includes a portion stepped
2 radially outwardly with respect to said skirt and being contiguously connected to said skirt by an
3 interconnecting wall portion, and wherein said wings are integrally connected to said interconnecting
4 wall portion whereby stiffness of said wings to flexure with respect to said band is greater adjacent
5 to said interconnecting wall portion than remote from said interconnecting wall portion.

1 A method of making a tamper-indicating closure that includes the steps of:

2 (a) providing a mold that includes a mold cavity, and a mold core having a
3 threaded core, a leader ring surrounding said core, a wing sleeve surrounding leader ring and a
4 stripper ring surrounding said wing sleeve,

5 (b) with said core in said cavity, molding a closure between said core and said
6 cavity, with said closure including a skirt with an axis and at least one internal thread segment
7 molded between said threaded core and said cavity, a tamper band coupled to said skirt and molded
8 between said leader ring and said cavity, and a plurality of foldable wings molded between said wing
9 sleeve and said leader ring, each of said wings extending inwardly from said tamper band and being
10 disposed at a counterclockwise angle with respect to said axis, as viewed from inside said skirt,

11 (c) retracting said mold core from said mold cavity with said closure retained on
12 said mold core, and then

13 (d) unthreading said closure from said mold core by rotating said threaded core
14 and moving said threaded core and said leader ring with respect to said stripper ring so that
15 engagement of said leader ring against said wings folds said wings in a clockwise direction as
16 viewed from an open end of said closure against said band as said leader ring and said threaded ring
17 are stripped from said closure.